

1      WHAT IS CLAIMED IS:

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- 3      1. In an apparatus for sealing the space between a floating roof and a  
4            tank wall in a liquid storage tank which includes means for mounting a  
5            shoe on the floating roof in the storage tank and maintaining the shoe  
6            in contact with an inner wall of the tank, the improvement which  
7            comprises an electrically conductive bonding strap connected at one  
8            end to a lower portion of the shoe assembly below liquid level and  
9            connected at a second end to the floating roof below liquid level, the  
10          bonding strap being of a length to minimize its self inductance, so as to  
11          provide a preferred path for dissipating electrical current through an  
12          oxygen deficient environment.
- 13
- 14     2. The apparatus of claim 1, wherein the bonding strap is made of a  
15          material selected from the group consisting of stainless steel, copper,  
16          tinned-copper, bronze and mixtures thereof.
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- 18     3. The apparatus of claim 1, wherein the liquid storage tank is an external  
19          floating roof tank.
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- 21     4. The apparatus of claim 1, wherein the bonding strap is no longer than  
22          required to bridge the distance between the floating roof and the shoe  
23          assembly at locations the bonding strap is connected there between,  
24          allowing for seal tolerances.
- 25
- 26     5. The apparatus of claim 1, wherein the bonding strap is made of a  
27          corrosion resistant material.
- 28
- 29     6. The apparatus of claim 1, wherein the bonding strap is entirely below  
30          liquid level.

- 1      7. A method of protecting a floating roof tank from the effects of a  
2               lightning strike comprising the steps of placing an electrically  
3               conductive bonding strap at one end into electrical contact with an  
4               inner wall of the tank below liquid level in the tank and connecting a  
5               second end of the bonding strap to the floating roof below liquid level,  
6               the bonding strap being of a length to minimize its self inductance, so  
7               as to provide a preferred electrically efficient path for conducting  
8               electrical current through an oxygen deficient environment.
- 9
- 10     8. The method of claim 7, wherein the bonding strap is made of a material  
11               selected from the group consisting of stainless steel, copper,  
12               tinned-copper, bronze and mixtures thereof.
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- 14     9. The method of claim 7, wherein the electrical contact with an inner wall  
15               of the tank is made through a sliding shoe seal assembly.
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- 17     10. The method of claim 7, wherein the bonding strap is no longer than the  
18               allowed seal tolerances between the floating roof and the shoe  
19               assembly at locations the bonding strap is connected there between.
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- 21     11. The method of claim 7, wherein the bonding strap is made of a  
22               corrosion resistant material.
- 23
- 24     12. The method of claim 7, wherein the bonding strap is entirely below  
25               liquid level.
- 26
- 27     13. In an apparatus for sealing the space between a floating roof and an  
28               inner tank wall in a liquid storage tank, the improvement which  
29               comprises an electrically conductive bonding strap in electrical  
30               communication with the inner tank wall and the floating roof located  
31               below liquid level, the bonding strap being of a length to minimize its

- 1       self inductance, so as to provide a preferred path for dissipating  
2       electrical current through an oxygen deficient environment.  
3  
4       14. In a liquid storage tank having an inner tank wall and a floating roof, the  
5       improvement which comprises means for establishing electrical  
6       communication between the inner tank wall and the floating roof, said  
7       means being located below the liquid level and being configured to  
8       have minimum self inductance, so as to provide a preferred path for  
9       dissipating electrical current through an oxygen deficient environment  
10      in the storage tank.  
11  
12      15. A method of protecting a floating roof tank from the effects of a  
13      lightning strike comprising the steps of providing an electrically  
14      conductive bonding strap in electrical communication with an inner tank  
15      wall and the floating roof whereby the bonding strap is located below  
16      liquid level, the bonding strap being of a length to minimize its self  
17      inductance, so as to provide a preferred electrically efficient path for  
18      conduction of lightning stroke current through an oxygen deficient  
19      environment.